

REMARKS

Claims 1-3, 5 and 7-9 are pending. Claim 4 is canceled herein without prejudice. Claim 1 has been amended to recite that Ln is Yb. Support for this amendment can be found throughout the specification as originally filed, for example in original claim 4. No new matter is added nor new issue is created.

Applicants respectfully reserve the right to pursue the claims as originally filed or similar claims as well as any non-elected, canceled or otherwise unclaimed subject matter in one or more continuation, continuation-in-part, or divisional applications.

Claims 1-5 and 9 are rejected under 35 U.S.C. 103(a) over Tomita, T. et al. (Rare Earths, 2002), in view of Alburger, J.R. (U.S. Patent 3,567,932). (Office Action, page 3)

Tomita describes a Eu(hfa-D)3BINAPO complex. Alburger describes a fluorescent metal-organic coordination complex.

The rejection states that Alburger discloses various metal elements, including ytterbium, and diketones, including 4,4,4-trifluoro-1-phenyl-1,3 butanedione, for the formation of a fluorescent compound.

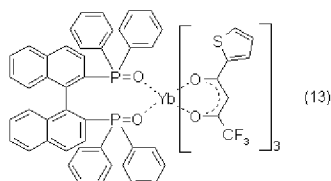
The rejection alleges that it would have been obvious to substitute the lanthanide Ytterbium for the lanthanide Europium to obtain a different colored dye complex. Furthermore, in the Advisory Action, the Examiner alleges that it would have been obvious to substitute the beta-diketones taught by Tomita with the seven specific beta-diketones disclosed by Alburger since the compounds allegedly coordinate metals in the same way and have the same core structure.

Applicants respectfully disagree.

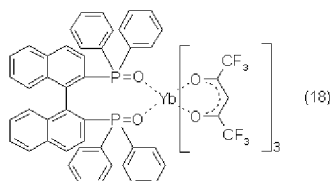
As an initial note, Applicants note that the surprising effect of utilizing a Yb complex is well demonstrated in the Examples. For example, as shown in Evaluation Example 3 of the instant specification, a complex (13), which includes Yb and ligands encompassed by the scope

of the present invention, shows preferable effects as compared with a comparative complex (18), which includes Yb and ligands which are not encompassed by the scope of the present invention.

Complex (13)



Complex (18)



Applicants draw the Examiner's attention to Figure 2 of the instant specification which demonstrates the considerably larger luminescence intensity of complex (13) as compared to rare earth complex (18).

As previously argued, Applicants believe Alburger has been mistakenly read to imply the interchangeability of each of the metal compounds with each of the chelating ligands. Applicants maintain that Alburger should be read to encompass at least 783 possible coordination compounds; and, indeed, as Alburger lists many generic classes, Applicants respectfully assert that Alburger reads on a genus which encompasses thousands of compounds.

The rejection alleges that Alburger teaches "using beta-diketones in complex with lanthanoids for forming brightly fluorescent ultraviolet-responsive dyes." However, Alburger specifically states that "**not all ligands may be used with each and every one of the listed metals to produce a useful fluorescent coordination compound**" (Column 5, lined 70-74, emphasis added). Indeed, the disclosure which the rejection cites does not relate to a teaching of Lanthanides in general but instead to Europium specifically. The rejection has not shown any suggestion in Alburger that Ytterbium would possess similar benefits. Alburger not only fails to suggest that Ytterbium would be a preferred metal among the 25 metals or that 4,4,4-trifluoro-1-phenyl-1,3-butanedione would be a preferred ligand, but Alburger also fails to suggest that the combination of Ytterbium and 4,4,4-trifluoro-1-phenyl-1,3-butanedione would be a preferred combination.

Finally, Applicants assert that there would have been no motivation for one of ordinary skill in the art to use 4,4,4-trifluoro-1-phenyl-1,3-butanedione (or any another beta-diketone in Alburger) in combination with ligands which are not disclosed in Alburger. That is, Alburger fails to disclose the inclusion of a second ligand in addition to those from the aforementioned genus of ligands, such as the BINAPO ligand on the left side of Yb in Claim 1 of the present invention. That is, Alburger is limited to the use of only one ligand in its fluorescent complex. As such, Applicants contend that even if one of ordinary skill in the art were to substitute a different beta-diketone from Alburger onto Yb, there would have been no expectation of success in further complexing the Yb atom as the binding of the 4,4,4-trifluoro-1-phenyl-1,3-butanedione would not necessarily “coordinate in the same way” in the presence of a second coordinating ligand.

As such, Applicants respectfully maintain that one of ordinary skill in the art would be unable to predict which ligands and which metal complexes would provide useful fluorescent compounds. Specifically, Applicants contend that one of ordinary skill in the art would not be able to arrive at the Yb complex of the claimed invention without undue experimentation or hindsight. Furthermore, one of ordinary skill in the art would have had no reasonable expectation of success in achieving the results of the instant invention based on the teachings of Tomita and Alburger. It is respectfully requested that the rejections be reconsidered and withdrawn.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as unpatentable over Tomita, T. et al. (Rare Earths, 2002) and Alburger, J.R. (U.S. Patent 3,567,932), as applied to claims 1-5 and 9 above, and in further view of Gladiali, S., et al., (Tetrahedron Asymmetry, 1998) and Reid J.C., et al., (JACS, 1950). (Office Action, page 5)

The rejection alleges that Gladiali teaches methods of making enantiopure BINAPO and that Reid teaches methods for making and purifying 4,4,4-trifluoro-1-phenyl-1,3 butanedione.

The rejection further alleges that it would have been obvious to one of ordinary skill in the art to utilize the enantiopure forms of these compounds to form enantiopure complexes.

As previously argued, regardless of what Gladiali and Reid teach, neither Gladiali nor Reid, alone or in combination, rectifies the deficiencies of the underlying rejection over Tomita and Alburger. As such, even if one of ordinary skill in the art were to utilize the enantiopure BINAPO and the 4,4,4-trifluoro-1-phenyl-1,3 butanedione described by the rejection, there would still have been no reasonable expectation of success in achieving the results of the instant invention based on the teachings of the Tomita and Alburger alone or in combination with Gladiali and/or Reid.

Accordingly, Applicants respectfully contend that none of Claims 1-5 and 7-9 would have been obvious to a skilled person in the art over the cited references because of claimed chemical differences. Accordingly, Applicants respectfully request reconsideration and withdrawal of all rejections under 35 U.S.C. § 103.

CONCLUSION

In view of the remarks made herein, the application is in condition for allowance. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance are respectfully requested. If a telephone conference with Applicant's representative would be helpful in expediting prosecution of the application, Applicant invites the Examiner to contact the undersigned at the telephone number indicated below.

Applicant believes that no additional fees, other than the fee for the two-month extension of time, are required in connection with this paper. Nevertheless, Applicant authorizes the Director to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to Deposit Account No. 04-1105, under Order No. 80658(47762).

Dated: June 17, 2010

Respectfully submitted,

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